AGRICULTURAL DEPARTMENT.

J. P. STELLE, EDITOR.

PUBLISHER'S NOTICE—All communications intended for this department should be addressed of the P Stelle, Fort Worth, Tex.

SUGAR CANECULTURE.

Industicle is in compliance with a reund made by a correspondent, through as GAZETTE, some weeks ago. writer sald he wanted us to give the whole state of sugar cane culture from beginning god and not leave anything out under imption that it was already underat the wanted the article written as who had never before heard of su-

the sagar cane referred to was sugar sure enough, and not sorghum. There no ageir caue; sorghum is no more may rang than broom corn is a sugar it am no nearer relationship to sucomenity, than an oak tree has To call it a sugar cane is to in quite a long stretch of imagina-- a sorghum: Johnson grass i Johan, therefore it would be as proper to call Johnson grass a guens it is to call the coarser-grow loom which we make sorghum a social vame. The name "Chiyar cane" was probably affixed by denor, who wanted his sorghum 2 on the reputation of real sugar

not be this becorrect name bepropos now attempt to distinthe sugar-case from the sor line the former wribbon cane. into improper for the ribbon cane sariets among many varieties no, as the ribuse cane," the gred preca cane" and the "ribbon an hosts of other varieties. The inc. is a target growing variety same strined in red and cream ternes running lengthwise of the secretics the idea of ribbons, It uest variety by any means; there ariettes more rich in saccharine or a some time it was thought to mirely variety, but this we are as a mistaine: for we have seen and the green cane growing far North as the ribbon three prown: The only real themselves could carry applies none small patches are cultia support for adulthing the came artist for chewing purposes who chews came for the sweet it will invariably choose the offered for sale at the grocers at a knowledge of this fact has

widthe ourself to true million of we are mistaken trawing aron us for the man consume the resent to tree thorse intions we can get him the deation which is something not is in refluctain. But we see far as pelates to the if from thirty nerves down, buy-Divertic cears been more or is sugar came enture of that man characteristic nearly our present arno continuits, the squall planta-

transaction soll, as along rivof car solls answer very of provided there is in municit of accompased yegeto prevent serious baking in south Say the land is covered by seems then fall-the weeds and under su soots as the fall a large and be ready for the cane

rest break the land obserballs Bon't donge that "break this good make your rows five nel of the best character six and believed in It is best how-" " are land good, if not naturally and all on of stable or lot manure. a correspondent talke or joi manure ulle flor cane salays. We care at stand how this could be, and - the ways by willing to risk

intote our must start his crop That, say for Middle ward, about the 15th of test may appreced after that mental slow to come m not probable that any it is time to be nipped by would this nappen nothimperior the rop will soon last year our cane was who when the noted March Deling near the gulf we had Every shoot was should but in a little while it allow was as good as any we taised on the same place

m of planting sugar cane was

saids by side in the fur-

and then cover to the in tuches by turning on a furres were to be used they were or the furrow atop of the cares farrow was turned on. Green cost from the lot or stable are not safe as the heat resulting from mentation may scald and destroy chould be pretty well rotted before cation is made. One of the best of applying the manure, as re-In in the coast country, is by what cowpenning." Cattle are penned it through late fall and early winter, after their removal the land is broken made trady for the cane crop. The efs executat. We cannot state posthow this plan would work on our clay helified to be muddy every time it s but on lands inclined to sandy nothcould be better for sugar cane. The

be against waxy lands is more than we are

prepared to set forth. While the old plan of laying two whole seed canes side by side in the furrow is still followed to a considerable extent, many have learned that it is better to cut the canes into sections carrying two joints on each. This secures an evener and better stand than can be had from planting the canes entire. How this can be is plain enough, The most vigorous shoots starting up from the whole cane will starve out the weaker shoots while all are yet depending upon the seed cane for sustenance, by drawing the lion's share of substance from the entire stalk. Cutting destroys connection, as it were, thus forcing the shoots to depend alone upon their own immediate sections for sustenance. Cut the canes midway between two joints with a sharp hatchet, or by some other means that will not crush or bruise them. Plant same as in case of the whole

The afterculture of sugar cane does not at all differ from that of corn; therefore we need not waste time in a description of the culture. If the land is naturally well drained the "laying by" working should leave it is nearly level as possible, but if flat and inclined to hold water after rains a waterfurrow is usually run in the middle at the time of "laying by." The harvest is out off to as late a date as can be risked on severe frost. A very light frost would not hurt the crop, but a regular freeze would ruin it. Before cutting the cane go into the field and strip off the blades from the highest matured joint down to the ground, on the plan of pulling fodder. The blades being worth nothing as a stock feed are left on the ground to be turned under at the next workng. Cut the stocks immediately at the ground with a cane knife or heavy hoe and

naul them to the mill The top joints not fully matured are to be cut off before grinding. Many people put these into "wind-rows" and save them for the next year's seed. A "wind-row" is simply a trench turned out with the plow or some well-drained locality. This trench stilled with the tops, and over them is thrown a three or four-inch covering of cane blades, to be followed with a furrow turned on, or by repeated furrows, until there is dirt enough above the seed to protect it from the freezes of winter. These tops make a fair seed, though not near so good as the whole canes-on this account most small planters prefer saving whole canes for the next year's planting, putting them up in wind-rows, as already described. For our own part we'd always prefer whole anes, regardless of their being a little more expensive.

In the tropics, and along the southern border of our North American cane belt, sugar cane "ratoons," which means sprout ing up from the previous year's stubble and enabling us to raise several annual rops from a single planting. We don't hink it could be depended upon to do much in that way above the line of 31 deg. north atitude. Below that line it rateons reason ably well if protected, and since Texas is so unlike other states, relative to climatic effeets it might be well to give the thing a fair trial further north. In the ratooning regions, above the frost line, so soon as the cane is cut a turn-plow is run on each side of the stubble, throwing the dirt atop of it as a protection from frost. In the next jirt is blocked off down to the head of the stubble, and the new crop allowed to gray up from the old roots

The manufacture of syrup from sugar cane is substantially the same as manufacturing syrup from sorghum. Last week in reply to a correspondent, we gave directions for making it so that it would not ferment, hence] we need not again touch on that part of the subject at this writing. Several correspondents have asked for information that would enable them to make sugar on a small scale from their small plantations. We could tell them how to do it, but, as stated last week, we don't think it would pay, as there is some complication about the processes, and a good deal, of trouble, It would be almost as much trouble to make tifty pounds of sugar as it would be to make 5000 pounds, therefore, in our opinion, the sugar-making must be left to the work of central factories, which will be prompt to come once our people evince a disposition to interest themselves in sugar cane culture. Already there are some factories of this character operating in the state and giving entire satisfaction. A sample of as fine raw sugar as we ever saw came to us from one of them last fall-from Camp county, if we remember correctly,

A great deal of sugar cane is raised by small planters in the gulf coast regions east of Louisiana. They have no small central factories there as yet, but the people are clamoring for them. Even with a soil about as poor as a soil well could be, those people schools will result, as the are making considerable money off their cane and molasses operations. There are many small portable mills that are hauled about the country from plantation to plantation, working up the cane into molasses on toll. If a man has but half an acre in cane the mill will stop at his place, work it up for him, and then go on to the next. Until we get our central factories under way the same arrangement might be made o work to advantage in many parts of Texas. Such mills are not at all expensive they are the same, in every particular, as the mills employed in working sorghum.

In some of the thicker settled regions. over there, they have little central molasses (not sugar) mills to which the neighbors haul their cane to have it worked up. They differ none from the portable mills save in usually being some larger. A planter cultivating, say, from ten to twenty acres in sugar cane, will buy a mill for his own use, and since his crop is not large enough to long keep the mill running, he arranges to work the cane of his neighbors when brought to him. The toll charged is lighter than that charged by the portable mills, hence cane is sometimes hauled quite a distance. It is no unusual thing for men to come ten or twelve miles to such mills with cane enough to make only four or five

It affords us much pleasure to find the people of Texas taking so much interest in sugar cane culture. A careful study of the thing of cattle cannot in any way injure matter from every available standpoint Professor Buckley has written about the his people for irrigating small tracts of

gallons of molasses.

THE MUSTANG GRAPE.

cess," as they say,

For the information of persons living in other regions we may state that there is growing wild near all over Texas a peculiar species of grape known for common as the "Mustang grape." Its botanical name is Vitis mustangensis, and it comes nearer being a grape without relatives, botanically, than any grape we know of. The fox grape (two species) partake more or less of other species, and the same may be said of the muscadine, the summer grape, the frost grape, and so on, but the mustang is a grape standing almost wholly alone as to natural peculiarities, both in fruit and plant. Leaves varying from entire to from three to five lobed, and deeply veined smooth above and of a light green color, but covered on the under-side with a white cottony down, which at a distance gives the plant more of a whitish than greenish appearance, Berries large and in bunches; color blueish-black, though occasionally vines are to be met with bearing a greenish colored fruit tinged with purple when ripe. The fruit is said to make a fair wine and a rule, much esteemed as

most excellent jelly, though it is not, as eating grape on account of an acrid juice ocated in the under-layers of the skin. which, if swallowed, leaves an unpleasant burning sensation in the throat. The fruit ripens in July well down in the state and in August along the northern border. Is not a long-running vine, as a rule, though the late Professor S. B. Buckley of Austin. who was the first to describe and name the species, mentions having seen specimens that had ascended trees to the height of eighty feet. | See United States agricul tural report for 1861. | Generally speaking. however, it confines itself to low trees, which, under favorable conditions, it completely covers with its foliage, making highly ornamental objects so peculiarly Texan as to promptly attract the attention of every stranger.

B Few species of wild grape vary more in character of fruit than does the mustang One seldom comes upon two rines of it bearing fruit exactly alike, so far as relates o quality and flavor. While the foregoing description points out the general character of the fruit, it may be added that specimens are occasionally met with in the woods that are entirely without an acrid flavor in the skin. The skin is extremely thin, and taken as a whole the grapes are said to be most delicious table grapes. Of course there could be no good reason for believing that such varieties would not prove to be supe rior wine grapes. Professor Buckley refers in his writings to one of these desirable varieties found in the woods near Austin and put to culture by one of his neighbors. It was of the light-colored kind already mentioned, and was giving its owner the highest satisfaction. Culture greatly im proved the fruit, as to size of berries, the berries averaging fully three-fourths of an inch in diameter, (see Rural Alabamian,

The mustang grape is now just coming into ripeness over a large portion of Texas. hence the present is a good time for Texans to interest themselves in spotting desirable varieties to be propagated from. A general attention to the matter on their part might do a work for our state, the importance of which would be greater than any work yet done for us in the fruit line. A really good variety of the mustang grape would place all Texas entirely on a level with El Paso and her famous "El Paso grape" so far as relates to grape production, with a decided advantage for us in the fact that our firstclass variety of the mustang would be a much larger grape than her "El Pazo." That such varieties could be found among spring, when danger of frost is over, the the wild mustangs, or are already known to persons, we have no doubt whatever, and the sooner the matter receives intelligent attention the better for every body.

A really good mustang grape would give to Texas a grape at home in every respect, wonderfully prolific and entirely exempt from the ravages of disease and insect enemies. It would be for Texas what the scuppernong grape is for the lower South ern states east of the Mississippi river, indeed much more. The scuppernong is not a bunch grape, and therefore is held back from popularity as a table grape; the mustang is a bunch grape, large and attractive, and hence a variety of excellent quality would be everything desired for the table. The scuppernong will not grow from cuttings, and therefore can be propagated only by layers, which involves a slow and difficult process; the mustang grows from cutings like a willow or cottonwood. The cuppernong makes only a white wine, and o make even this a large per cent of sugar must be employed; the mustang would make a rich red wine, and the probability exists that in case of a good variety with no acidness about the skin, no sugar whatever would be needed in wine-making. But the scuppernong, with all its faults, is worth millions to the people of the states in which it can be grown. If it were possible to buy it entirely away from those states in such a way that they could never again grow it, we are entirely willing to venture the opinion that Texas now has not and never will have, at one time, money enough to pay the price that would be asked for it. And whence came this wonderful and highly valued scuppernong! A man rambling through the wooded wilds along Scuppernong creek in North Carolina, where the little-prized muscadine grapes hung in black festoons from the trees upon which their vines had climbed, came suddenly and unexpectedly upon a muscadine vine bearing greenish white grapes. The find was one so strange that he concluded to try the eating qualities of the phenomenal fruit. It pleased him exceedingly, and there was a peculiar aroma about it that also pleased him. When he had told his friends about the white muscadine on Scuppernong creek, and the peculiar aroma it gave off (the black muscadine being wholly without aroma), his friends declared that he had been fishing; and to convince them that he was no fisherman he took them to the vine, and they had to give in, of course. And from that single vine have sprung, through the process of lavering, all the scuppernong grapes now known to the world. Nothing like it had ever been seen in the woods before; nothing like it has been seen in the woods

Now, where is the Texan who, before the present season of ripe mustangs is over. will report a freak for the mustang grape equal to that scuppernong freak of the muscadine? It is in Texas, no doubt: it may be here in considerable variety. What sands land—as to whether or not it would fully convinces us that Texas may make of good mustang cultivated at Austin leads us | land from comparatively weak-flowing arte-

sugar cane culture a real "howling suc- to think rit is. Undoubtedly it is well worth looking after.

> One statement more with reference to the mustang grape and we are done for the present. While it will grow on almost any character of Texas soils it most delights in the alluvial soils along our rivers and creeks. Inundations from overflowing streams do not burt it in the least. Now, when we have found a good variety of the species we shall have it within our power to turn into profitable vineyards all our lands subject to occasional overflows, and hence unsafe for any other character of crop, save the pecan. With our pecan and a good mustang grape those lands now held at low value because of high-water danger will speedily become the most valuable lands we have.

> > CENTRAL SUGAR FACTORIES

An article of ours appearing in these columns some months ago, showed from reli able authorities that a very large proportion of Texas was eminently suited to a success ful culture of tropical sugar cane ("ribbon cane," as it is sometimes called), and that the day would probably arrive that would find Texas producing by far the largest quantity of cane sugar grown within the United States. The article seems to have attracted general attention, and as a result we have numerous letters asking for information with reference to cane culture in general, and the manufacture of syrup and sugar in particular. One of these letters asking for information concerning the manufacture of syrup and sugar was published in our correspondents' department of last week, as referred to in another article. In our reply it was given as our opinion that it would not pay to undertake the manufacture of sugar on a small scale, but that, where considerable communities would go into the business of cane growing, small central factories might be established to work up the product of the planters, and that the factories might be made a paying success. We now have before us a copy of the New Orleans Sugar Bowl, in which is an article treating on these central sugar factories. It states, in substance, that every where throughout the United States, where tropical sugar cane and sugar beets are be ing grown, the people are talking up an erection of small central sugar factories to purchase the raw material and work it into sugar. Tropical cane and sugar beets pay the grower better than almost any other crop, provided he can get a ready market for his product. These small central factories, located in communities, would give him that market, while at the same time, they would do a profitable business for their owners. The same factory could be made to work both cane and beets. The people are resolved on having them, hence it is highly probable that within the next few years very large sums of money will be invested in their erection.

The central sugar factory, says the Sugar Bowl, is comparatively a new idea in the United States. Even in Louisiana, the greatest sugar-producing region of North America, as yet, the matter has not been taken hold of in earnest until this year. Now the cry goes up everywhere for central sugar factories. Scarcely a locality can be found which (in the opinion of those directly concerned) is not the best place in the state for such an establishment. This only serves to show that there are man places where they are needed, and, in ac cordance with a law of nature, no greawant can long remain unsatisfied. The extent to which these central sugar

factories are in demand is amazing. It would probably take a hundred million dollars to establish all asked for, and so great an interest is bound to bring them, and when they do come there will be a complete revolution in the sugar industry. It will be the small planter who produces our sugar instead of the large, as in the past, for the profit to himself than can the large planter acting as both producer and manufacturer. The present outlook would seem to indicate that even in Louisiana the great sugar plantations must speedily go. They will be divided up into small plantations, the products of which will be sold to central factories. So great is the demand for central factories in Louisiana alone that, according to the Sugar Bowl, \$50,000,000 could to-day be profitably invested in them. Already several are in successful operation, the largest, perhaps, being at Franklin, St. Mary parish. It turned out about 6,000,000 pounds of sugar last year, but even this great capacity is found to be entirely below the requirement. So great is the rush upor it, and so rapid the increase of small plant ations in the neighborhood, that the proprietors are seriously considering arrange ments for doubling its capacity. This statement from the Sugar Bowl is of sperial interest as showing how the sugar industry of this country is undoubtedly tending, and what shape we may safely count upon for its general establishment in the near future.

Central sugar factories will let Texas in as by far the greatest sugar-producing state in the Union. Her sugar cane belt, or regions in which sugar cane does as well as it could possibly do in North America, is larger than five such sugar belts as the one appearing in Louisiana. The only thing holding Texas back in the cane sugar indus try, up to this time, has been the large plantation system. The spirit of our peo pie seems to tend towards small plantations as a rule. These central factories will be in strict harmony with that prevailing spirit. The man seeing fit to devote only half an acre to sugar cane will be able to haul it to the factory and realize just as much for it, pound for pound, as he would realize were he cultivating 10,000 acres to the crop.

Then, in addition to this, we have an immense area entirely suited to a culture of the sugar beet. The sugar beet does its best on lands inclined to sandy-we have lands of this character in very large representation throughout what we term our sugar belt. Under these circumstances the planter will be able to take his choice as to his sugar crops. If he prefers to raise sugar cane for the central factory he will settle on lands best adopted to the production of cane; if beet culture suits him best he will locate on the sandy lands. So strangely has nature thrown together our lands of different character that the cane growers and the beet growers may make up the same community almost anywhere, hauling their different products to the same central factory. Truly Texas is strangely and wonderfully made.

SIMPLE ARTESIAN IRRIGATION

Last week we met a Mr. Walter C. Noyes of New Mexico, who described to us a very simple method considerably in vogue among

sian wells, so simple that we want our own people to hear about it. The little field specially described by him contained only four acres lying on a gentle slope or decline all one way. About midway on the highest side of the field was an artesian well. The field was laid off in seven plats of narrow beds running from the highest to the owest side, and having shallow ditches (mere furrows) between them. For convenience we will number these plats from one to seven. A common rubber hose long enough to reach from the well to either corner of the field, along the highest side, was employed. And now for the method of applying the water:

The crops having been planted and everything put in order, the hose was dragged to the head of plat No. 1, and all the water of the well allowed to flow down its ditches through, say Monday and Monday night. This effectually watered plat No. 1. Tuesday morning the hose was moved to plat No. 2, and the water allowed to flow down the ditches of that plat through Tuesday and Tuesday night. Wednesday morning found the water flowing in at the head of plat No. 3, and so on in regular routine until irrigating No. 7 was the work of Sunday and Sunday nigh. By this time plat No. was again in need of water, so the hose was dragged to the original starting point, and the same routine gone over from day to day as in the first instance, and thus it was kept up throughout the season.

Our informant assures us that the effect was magnificent. Crops lapping upon each other were flourishing continuously from the latest killing frost in early spring to the earliest killing frost in late fall.

The arrangement interfered not at al with regular culture, he said. If, in working over the land, the narrow ditches be tween the beds were broken up, a turn plow passed through them each way, the last thing after working, followed with a hoe to lift out such clods as might have fallen into the furrow, made everything rendy and all

right for the water. The crops cultivated on this plan were mainly vegetables, though a good deal was done in grapes. The plan made grape vines appear to be doing their level best to turn themselves all into fruit. The tree fruits were not much cultivated on these small fields, owing to the fact that vegetables. giving three crops in the season, were more profitable. With tree fruits but one cror in the season could be expected. Some tree fruits were grown here and there on a limited scale, however, such as peaches, apples and pears, and all were giving the fullest satisfaction.

There are now in the great artesian areas of Texas hosts of wells put down for do mestic purposes, from which is regularly running to waste water ample in quantity for irrigating at least four acres of land or this New Mexican plan. Such waste is just about as bad as pitching one's bread and meat out at the window to be devoured by stary dogs. The owners of these wells often cultivate considerable acreages of land or the old plan, when this waste of water if properly applied would enable them to get more clear profit from four acres of land. probably, than they are now getting from a dozen or more acres, and to get it with a degree of certainty that can have no varia-

OUR CORRESPONDENTS.

This department is devoted to answering such questions as may be asked by our subscribers, which may be of general information inquiries of personal character that require answer by mail should always have stamp inclosed. Pieuse give full name and postoffice address in addition to any such signature as Subscriber, or "A G. D." not for publication, if against the will of the writer, but to admit of direct communication should such a thing be deemed necessary. Address as directed at head of this page. CONCERNING THE BOLL WORM.

who interrogate you that your knowledg of things in general should be universal; that your replies on each and every inter-rogation, no matter how widely different the one might be from the other, should be both definite and specific, whether these in-terrogations come within the boundaries of chemistry, botany, physiology, ornithology

entomology, or any kind of ology.

Being without doubt no exception to the rule myself, and like a "drowning man grasping at straws." I am ready to fly to the sanctum for information as to the best mode of destroying the detestable bot worm, if there is any such made

Boll worms have commenced on our cot boll worms have commenced on our cot-ton in full force, and are now laying waste everything before them in the shape of a square or boll. It is estimated by the most knowing ones among us that the worms are destroying at least a bale a day on every fifty acres of land in cotton, and this too while the worms are yet young this too, while the worms are yet young, They are working the most serious damage on late cotton, and it is upon this cotton that they have commenced operations. They are in greatest numbers on the largest stalks, but they do no harm whatever so far as relates to the growth of the plant, indeed they rather accelerate the growth of the plant, seemingly, than retard it. The worms make their appearance on the

smallest "squares" at the ends of the limbs of the plant, which fact is known by the little "square" spreading itself wide open. At this stage the worm is so small as to be scarcely visible-visible only on the closest secretiny. But the little fellow's diminu-tion cuts no figure in the case as to his grinding and boring capabilities. As he in-creases in size these capabilities increase in proportion. The growth is very rapid, and the insect usually remains on the same plant until every vestige of its fruit is detroyed, when a change is made to the next

Now, since the boll-worm depredates on the fruit of the plant, only, and all of the young fruit is completely enveloped in a rifoliated sheath or covering, I, and I might say all other cotton raisers, would like to know if there is any way, means or process by which these worms can be destroved while in the worm state! Some of my neighbors say that Paris green or Lon-don purple sprayed or dusted upon the plants will kill the worms; others say ison will not kill them, owing to the fact that they are hidden away in the square or boll. I wish also to know what causes these worms; whether or not they come from a moth or miller fly? If so, how does the fly or moth look—what is its color? Will placing lights in the field at night destroy the fly! Will the worms here now make more flies this season!

Upon closer examination I have found two kinds of worms depredating upon the cotton bolls; one is a semi-transparent worm of a pale green color with legs on it from end to end, while the other is of a blackish-brown color with legs fore and aft, and with a traveling gait something like

that of the measuring worm.

These worms are now doing their greatest danage in portions of the country where good rains have fallen—in dry regions no worms have appeared as yet. So it seems that if the farmer will not curtail his production of cotton purposely, nature steps in and makes the crop short by ex cessive dry weather in some localities and worms or something else where the season is more favorable. This is the way it works despite the efforts of man to the contrary. T. S. MILLER.

The Grove, Moffat, Tex. According to Professor J. Henry Comstock, by far the best entomological authority in America, there is lying in the ground somewhere about the field, through winter, a small mahogany-colored chrysalis about three-fourths of an inch in length. When

armigera. In due time it proreeds to deposit eggs upon about the first green thing it comes across. It is not at all particular as to the plant chosen for its "nest." Corn suits it to perfection, cotton suits it very well; cockle burrs, jimpson weed, snap beans, tomatoes and even tobacco can either be made to answer its pur pose all right. Those eggs soon hatch out minute worms, varying somewhat in color from light green to several darker shades. When the very young worms walk they loop up their bodies a good deal on the 'measuring worm" plan. So soon as out fleshy parts of the plant where they first appeared. They grow rapidly, and in a few days cease their feeding upon the surface and proceed to bore into something. If we find them bored into the bud of the young corn we call them "corn bud worms," if into the soft ear we call them "corn worms," if into the young cotton square we call them "flare worms." if into the cot ton boll we call them "boll worms," if into bean pods we call them "bean worms," if into tomatoes we call them "tomato worms," and so on. But it is all the same worm at last-corn worm, boll worm and

There is no regular color for the mature boll worm. The prevailing color may be said to be greenish, particularly early in the season, but the green is more or less marked by spots and stripes in various shades, which give it quite a variety of appear ances. As it grows up to larger size it ceases to loop its body in moving, but glides evenly along. It remains as a worm from eighteen to twenty-four days, depending upon the character of the weather, when, being fully grown, it comes down from the plant and burrows in the ground, where it transforms into the chrysalis state, as al ready described. In from ten to tifteen days spent as a chrysalis it comes out as a new moth and proceeds to start a new brood of boll worms.

tomato worm-the larva of Helioths armi-

gera.

There are from four to six annual brood of the insect in Texas, each brood being nore numerous than the brood preceding it, of course. The last brood of the season coming on too late for a full run through the transformations, such worms as are fortunate enough to get into the chrysalis state so remain through the winter, to start the boll worm business anew next spring This is all there is of It.

As to remedies for the pest, Professor Constock thinks the arsenical poisons, as applied for the cotton worm, would destroy the young boll worms while they were still feeding upon the surface of the plants, but after they had bored into the bolls it would not be possible to reach them with poison placed upon the surface. The mature moths feed upon a nectar exuding from cer tain parts of the plant, hence the usual poisoning as resorted to for the cotton worm would be apt to destroy a goodly number of the moths. As a consequence i is but reasonable to suppose that the planter poisoning for cotton worms will at the same time be doing a good deal towards cutting down the work of boll worms.

Lights in the field for the moth to fly into at night were highly recommended at one time, but we think people have about dropped that plan, under the impression that it was not sufficiently effective to pay for the trouble. The fact is, economic entomology knows, as yet, of no entirely effectual remedy for the boll worm.

I send you some samples of grasses marked respectively No's, L 2 and 3. They were all taken from my yard—No. I from underneath a holly tree, where carcely a ray of sunlight ever falls upon it and No. 2 from underneath a pear tree where the shade is not so dense sample of Bermuda grass. To further aid you in making comparisons I would add that No's, I and 2 bear seeds, from a compact sod and much resemble the Bermuda grass. Please give name, quality and pe-culiarities of No's, 1 and 2. Is the grass nutritious for stock, and is stock usually fond of it? Is it the Fort Worth saws grass! Gordon, Tex.

Nos. 1 and 2 appear to be the same grass that we have often referred to in these columns as Texas sward grass. It is much like the regular Bermuda grass (Cynodon dactylon), though it has a goodly number of strongly marked variations clearly dis tinguishing it from that species. The peo ple of this part of the state, where it grows abundartly, all call it Bermuda grass. The say it got its start in this region from seed sown. Our attention was first called to i by a bulletin of the Texas experiment station which, while mentioning its genera resemblance to Bermuda grass, referred i to an entirely different genus.

If it is proper to call all grasses belonging to the genus Cynodon by the common name of Bermuda grass, we are about arriving at the opinion that this sward grass is really a Bermuda grass, but not Cynodon dactylon. No standard work on botany gives us more than one species of Cynodon, but our study of the two grasses under consideration has led us to strongly suspect that there are two species much alike in general appearance, but widely different in many special particulars, and that sward grass is

Cynodon dactylon is the bermuda grass of the Eastern gulf states, but this so-called sward grass of Texas is not Cynodon dac tylon, undoubtedly, nor have we ever met with it in any state east of Texas. Later is the season we shall publish the result of our studies with a careful comparison of the two grasses. While not fully prepared to answer your questions with reference to the value of your Nos. 1 and 2 as a stock grass, we are inclined to think it an excellent grass for spring and early summer pasture. If it is really a Cynodon it is probably entirely on a par with the regular Ber muda grass, which, as you doubtless know, is a highly nutritious grass.

BORING THE SKY FOR WATER.

I am a good deal interested in this govern nent experiment being made in Texas with a view to producing rain, and I hope your next "Popular Science" column will give us full particulars with reference to it Tarrant county, Tex. TRINITY.

"Popular science" means an array of scientific facts so put up as to come clearly within the comprehension of the masses, This being the case, we cannot well comply with your request without coming in direct conflict with our headings. As yet there are no facts to particularize in the case, and certainly no scientific facts. Of

warm spring weather has started up veges a fortunate in hitting a favorable time for tation a small buff and gray colored moth or I conducting their experiments with a view miller comes forth from that chrysalis. To securing further appropriations for With fully expanded wings it would about | "perfecting the work so auspiciously bereach across a silver dollar. There is no guar etc., but that was their good fortune, common name for it that we know just as good fortune used to sometimes of, but entomologists have affixed to throw a patient into the hands of the oldit the scientific name of Heliothis fashioned illiterate doctor, to get well anyway and give the doctor's bread pills credit. for curing him. If this rain performance could have been worked in secret the thing would not have been so bad, but we fear it will not redound much to our credit among scientific people in other civilized countries. But it is a strange wind that blows good to nobody, they say. Already we are beginning to think that we can see where some good may grow out of this United States governmental dance of the dynamite: the fact that our congressmen agreed to an appropriation for any such purpose will be apt to impress upon the masses the need of of the eggs they fall to feeding upon the | teaching at least a little science in their common schools.

COLORADO GRASS

Having noticed in The Gazerre "M. "s" petition for information with reference to Colorado grass, I would take the iberty of saying that I regard spring as the best time for sowing to Colorado appears to be of the same family as grass, which grows so luxuriantly in Texas through spring and summer—it very much resembles crab grass, the only differ-ences lying in the facts that it makes a much stronger growth and has larger seeds I consider it one of the finest grasses we have, and when it becomes more generally known I predict a great future for it as & hay crop. The seed can be had from the Fort Worth nursery, seed and canning company, Fort Worth or Dallas, Tex. Dallas, Tex. F. W. N. S. AND C. Co.

Colorado grass is probably some species of Panicum-there are some very good grasses in that genus.

A VRIEND UNDER SUSPICION

I see that you can give the name and his-tory of almost anything sent you, so I take the liberty of sending you an insert than s causing me some uneasiness. I wish to earn whether or not it is poisonous in any way. We live in an old rock house, and the creatures come during from the cracks in the walls and floors, greatly to the amount of myself and children. You can do not an appreciated favor by stating through lives FAZETTE whether or not it is to be regarded

It is a brownish creature nearly an incle rlength, and with long legs rising above ts body and bending over somewhat like hose of the well-known "grandfather longegs," though the legs are not near so long is those of the "grandfather" It is a rapid conner, and when out on the gallop it presents an appearance that pretty, effectually ruts off one's desire to take it in his hands or much make up with it in any way : - 4 very common in Mexico, especially about the adobe houses, where it quite generally roes by the name of los grennos, which in English would mean "the greenborn." That name was probably suggested from the fearof it evinced by strangers, green with refrence to Mexican things

No creature could be more harmless. The Mexicans like it, and regard it as their special friend. It is strictly insectiverous. is to its diet, and hence the Mexicans think he more los grengos they have in the house he weaker representation will there be of fleas and -well, you have heard all about what the lower order of Mexicans have in he way of domestic livestock living in their

LOCUSTS IN DALLAS COUNTY.

A lare number of grasshoppers of a peuliar build have appeared on my place. ook some of them to Dallas yesterday, and a gentleman high among the savans of that ity assured me that they were the genuine Rocky Mountain locust or grasshopper that often works such sad haves in some of our states west of the Mississippi river. Where they came from I cannot tell, as I never say my before—the Dallas gentleman says he there's they must have swooped down upor me in the night, and that they are probably the foremuners of a regular scourge. The the suggestion of a friend I send you, in a companying box, a few specimens for your opinion as to what they are. Please an swer through Tag Gazerre. We are low looking to THE GAZETTE for correct formation touching such matters as aver do not ourselves understand. Are they lo-custs, sure enough? Parker. Dallas county, Tex.

Yes, they are locusts, sure enough; but hey are the dreaded Rocky Mountain tocustor grasshopper, so called, just about as much as a mud-turtle of the Trinity is a green sea turtle of the Gulf of Mexico. They are what entomologists call the cree legged locust," for common, and the Acrydium femur rubrum for science. The

The red-legged locust don't swoop down on anybody for the reason that it can't get up anywhere to enable it to swoon down Doubtless you raised on your own farm the stock of it now interesting you, and it is not at all probably that for this season you will see any more of it than you are now seeing. But the Rocky Mountain locust is a swooper in the fullest sense of the word. It swoops down in myriads from the Rocky Mountains, so supposed, whenever it con clades to come East on a little summer picnle of its own, and if the locality upon which it swoops doesn't pan out exactly to its liking, it, as one man, goes far up into the air and then sweeps down somewhere eise. In a word, while the red-legged to rust no little resembles the Rocky Mountain locust in a general way, it is not built on the plan of an eagle so far as relates to wings. It can't ffy much. A very short. distance on the wing, and down to the ground it must come for rest and a new start. Its wings are short, being a very little longer than its body. On the other hand the Rocky Mountain locust has wings more than one-third longer than its body, and with these it can lift itself high in air and fly all day if it desires to do so.

The red-legged locust is a reddish or mahogany colored grasshopper-so is the Rocky Mountain locust. They are about the same size, and to the inexperienced would look about as much alike as two peas but for this variation in the length of wings, The red-legged locust invariably has short wings-the Rocky Mountain locust invariably has long wings.

BETTER WATER FOR HORSES. Not long ago you stated in THE GARRITE

that you belonged to a society organized for the prevention of crueity to animals. I would like to call your attention, as a member of that society, to a very fruitful theme for your ever-ready pen. Walk over to the east side of the public square in Fort Worth and take a look at the public watering trough there, and the poor horses drink; from it, merely because they are so thirsty that they cannot help drinking is not a good deal of cruelty to animals conspi-uously displayed there? In the first place the trough is ever as fifthy as it well could be, and in the second place it is supplied by a small hydrant with water brought fro the Trinity-water a goodly porte time literally thick with mud. S rangement is simply a disgrace to any city It is so unlike anything seen in other places